

ABSTRACT

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2 A method for DNA reassembly after random fragmentation, and  
3 its application to mutagenesis of nucleic acid sequences by *in*  
4 *vitro* or *in vivo* recombination is described. In particular, a  
5 method for the production of nucleic acid fragments or  
6 polynucleotides encoding mutant proteins is described. The  
7 present invention also relates to a method of repeated cycles of  
8 mutagenesis, shuffling and selection which allow for the directed  
9 molecular evolution *in vitro* or *in vivo* of proteins.